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(51) INT CL<sup>4</sup>  
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B7H 521 523 714 741 DA  
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GB A 2121742 GB A 2101813

(58) Field of search  
B7H  
H2A

ERRATUM

SPECIFICATION NO. 2156291A

Page No 1 Line No 48 after approximately  
delete 181  
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12 November 1985

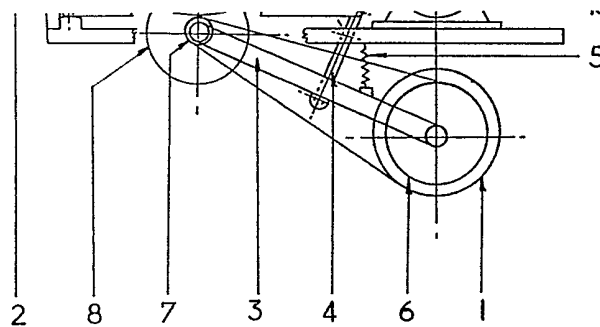


FIGURE 1

GB 2 156 291 A

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(54) Regeneration for electrically driven vehicle

(57) An electrically driven vehicle has a wheel (1) fixed to a retractable trailing arm (3) which is lowered to the ground when the vehicle is in motion. The wheel is arranged to drive a fly wheel (10) which incorporates a centrifugal clutch which engages with means (13, 14) to drive a generator (15) for charging the vehicles batteries.

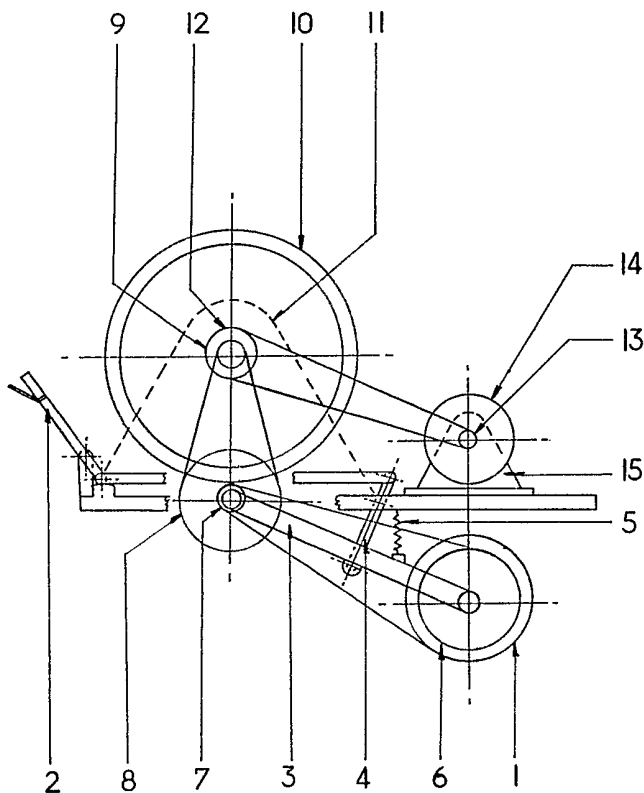


FIGURE 1

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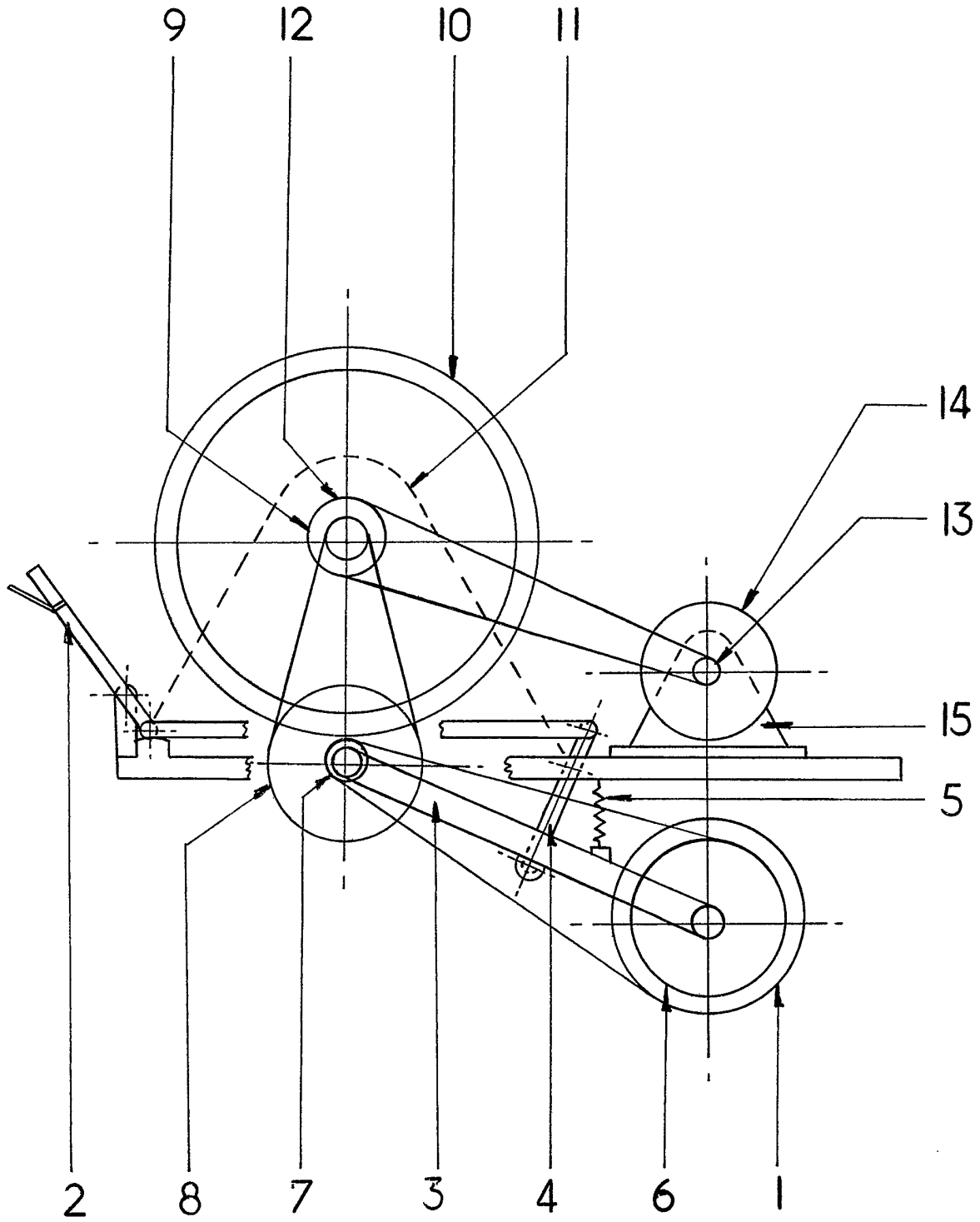


FIGURE 1

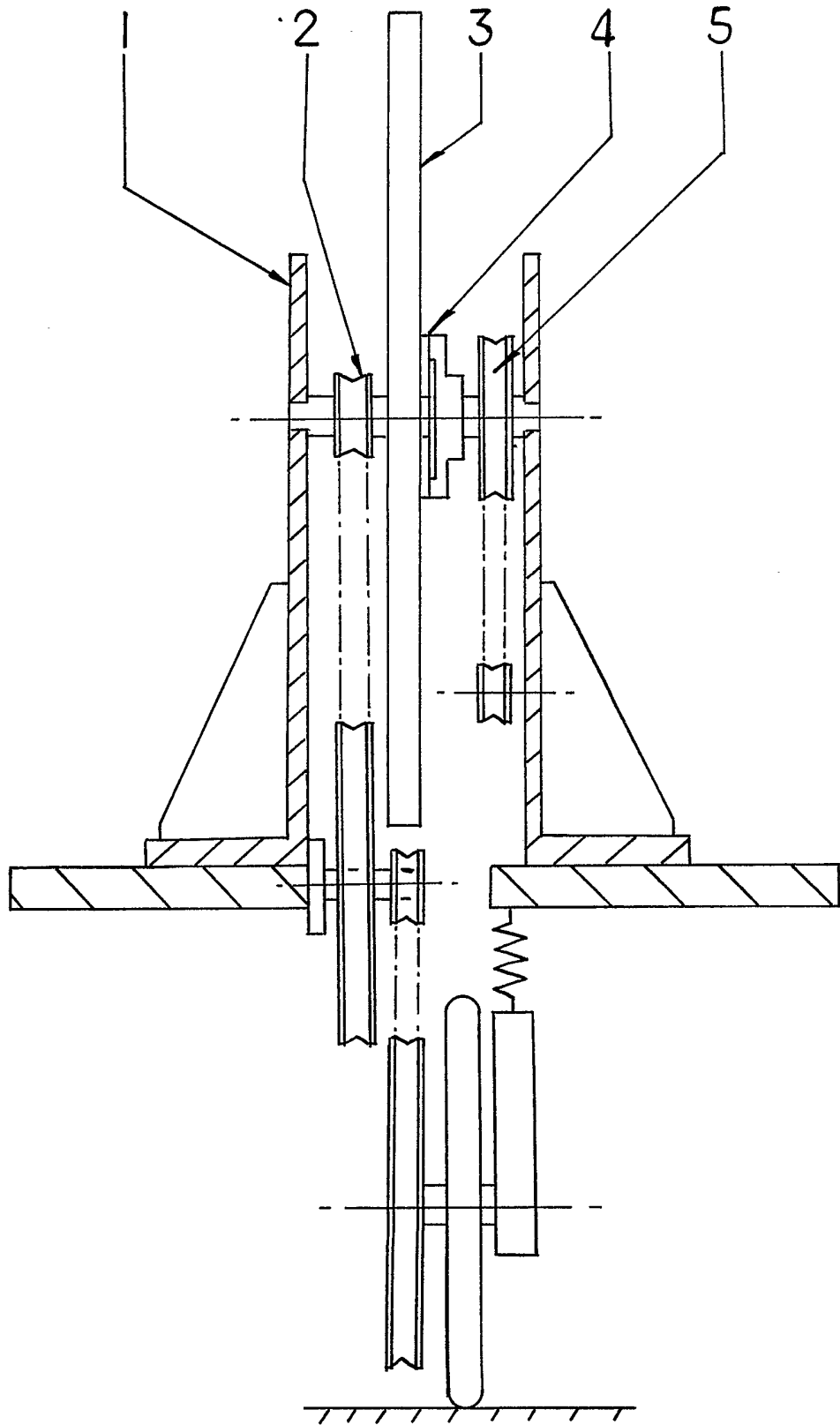


FIGURE 2

KEY TO FIG. 1

- 1 ROAD WHEEL
- 2 ROAD WHEEL RETRACTION LEVER
- 3 RETRACTION ARM
- 4 RETRACTION ARM LEVER
- 5 TENSION SPRING SHOCK ABSORBER
- 6 ROAD WHEEL PULLEY
- 7 RELAY GEAR PULLEY
- 8 RELAY GEAR - 2ND SPEED
- 9 3RD SPEED PULLEY
- 10 FLYWHEEL
- 11 MOUNTING PLATES
- 12 FREE-WHEEL DRIVE
- 13 FINAL DRIVE PULLEY
- 14 FLYWHEEL
- 15 GENERATOR

KEY TO FIG. 2

- 1 MOUNTING PLATE
- 2 2ND SPEED PULLEY
- 3 FREE-WHEELING FLYWHEEL
- 4 CENTRIFUGAL CLUTCH
- 5 FINAL DRIVE PULLEY

## SPECIFICATION

**Self-regenerating electric motor**5 *Technical field*

This invention relates to the re-charging of batteries on an electrical driven vehicle while the vehicle is in motion by the energy produced by that motion.

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*Background*

The most difficult problem encountered by drivers of electrically driven vehicles is the limit of the electrical power that can be stored in the batteries that it can carry. This invention will greatly increase this range by generating from the movement of the vehicle a substantial amount of current which will be fed back into the batteries. This will therefore greatly reduce the number of times the vehicle is out of use for re-charging, and will more than double the range of existing electrically driven vehicles. It would form the basis for a new two seater car design which would be cheaper, cleaner and quieter than conventional petrol driven transport.

*Essential technical features*

From experiments that have been carried out it has proved possible to generate a substantial amount of current which can be fed back to the batteries using the system outlined in the drawings. A 38 cm diameter (including tyre) x 7 cm wide road wheel (1) is lowered to the ground when the vehicle has overcome its initial starting drag.

This is done by releasing the lever (2) which will allow the spring loaded arm (11) to lower the wheel to the road. The wheel can be disengaged by the reverse action of the lever. The tension spring (3) will also act as a shock absorber. A 30 cm pulley or chain wheel (4) attached to the road wheel will transmit the motion to the relay gear (5) by means of a 'V' belt or chain to a 7 cm pulley or chain sprocket wheel (6). The relay gear will then transmit to a 7.6 cm free-wheeling pulley (7) attached to the flywheel (8) which is supported by the two side mounting brackets (13).

The flywheel is 66 cm diameter overall including a 5 cm balanced rim weighing approximately 181 kg.. The free-wheeling pulley will allow the flywheel to maintain its momentum when the vehicle is at a standstill at traffic lights for example or other short stopping periods.

The flywheel also incorporates a centrifugal clutch as illustrated in Figure 2 which will automatically engage at a pre-determined speed and disengage at lower speeds thus assisting the flywheel to maintain its momentum.

From the pulley (9) on the flywheel, the motion is then transmitted to the generator pulley (10). The generator (14) is fitted with a 26 cm diameter flywheel (12) which weighs 4.5 kg.. This greatly increases its efficiency in maintaining its momentum during slow running or temporary stops.

*Example*

Figure 1 clearly indicates the manner in which the invention would re-generate electric power by the lowering of a wheel on a retractable trailing arm. The energy from that wheel is rapidly transmitted to the flywheel producing 2112 R.P.M. at 10 M.P.H. At this speed the drag on the road wheel becomes practically insignificant. Varying gear ratios can be used. On the ratio mentioned a final drive will produce 8448 R.P.M. capable of generating 1.920 kw at 10 Miles per hour.

## CLAIMS

1. A self-regenerating motor built in to an electrically driven vehicle in which a wheel, fixed to a retractable trailing arm, is lowered to the ground when the vehicle is already in motion. The energy is transmitted to a flywheel which incorporates a centrifugal clutch which will engage and disengage at upper and lower speeds, thus assisting the flywheel to maintain momentum. This, in turn, generates an electric charge which is returned to the battery. Thus the battery is re-charged by the impetus of the vehicle itself, and the range of travel is more than doubled before the vehicle's batteries need to be re-charged from a mains supply.